

REMARKS

The specification has been amended to insert the Serial Number and filing date of the co-pending application mentioned at pages 5 and 10 of the specification.

New claims have been presented to better differentiate the present invention from the prior art, in particular, U.S. Patent No. 5,095,612 to McAvena.

In view of the above amendments, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By CEM

Carl E. Moore, Jr.

Registration No.: 26,487

MARSHALL, GERSTEIN & BORUN LLP

233 S. Wacker Drive, Suite 6300

Sears Tower

Chicago, Illinois 60606-6357

(312) 474-6300

Attorney for Applicant

connects the windings to the motor casing. This potting resin serves three functions: a protective layer that isolates the stator windings from contact with moisture which
5 may enter into the motor interior; a means of filling as much of the voids as possible to reduce the amount of vacuum when the motor cools; and, a heat-transfer medium for conducting heat which is generated in the stator windings while the motor is running to the motor casing for discharge into the atmosphere. The potting resin incorporates a heat transfer agent -- generally a powdered ceramic such as alumina. A
10 process for the in situ formation of such a potting resin around a motor stator assembly is disclosed in United States Patent Application Serial No. 10/678,928, filed 3 October 2003, filed contemporaneously herewith, the contents of which is incorporated by reference herein.

The disclosed motor includes a rotatable motor shaft having a fixedly-mounted
15 rotor assembly, which extends along the central axis of the motor. At least one end of the motor shaft (the operative end) extends outside of the motor casing for coupling to a pump or other device.

A pair of circular end bells are disposed at each end of the motor. Each of the end bells is shaped to correspond with the flared ends of the motor casing. Each of
20 the end bells contain a drip groove on the outer diameter of the bearing hub to route condensation to the bottom of the end bell instead of onto the bearing. Each of the end bells contains a centrally-located mounting for bearing assemblies, which both support the motor shaft and allow it to rotate. In addition, at least one of the end bells ("the open end bell") has a shaft bore for passage of the operative end of the motor
25 shaft through one of the bearing assemblies and outside of the motor casing. This region of the motor is prone to moisture intrusion.

To protect the wire windings 48 and the end-turn regions 50 from moisture, humidity, and any corrosive material that may enter the motor casing 12, the wire
5 windings 48 are encapsulated in the solid resin 30. As shown in FIG. 1, the solid resin 30 encapsulates the end-turns 50, the portions of the wire windings 48 that are in the slots (not shown), and any gap that may be present between the core 46 and the inner wall of the motor casing 12. In effect, the resin 30 covers the entire or a substantial portion of the stator assembly 14. The resin 30 is formed so as to be free
10 of voids and virtually integral with the stator assembly 14. The resin 30 is also heat conductive. Accordingly, the resin 30 serves two functions: a protective layer that isolates the windings 48 from contact with moisture that may enter the motor casing 12; and, a heat-transfer medium for conducting heat that is generated in the windings 48 when the motor 10 is running to the motor casing 12 for discharge into the
15 atmosphere. The resin 30 occupies a substantial volume of the casing 12, because it is desirable to have the resin 30 occupy as much of the casing 12 as possible without hindering the operation of the motor 10. Accordingly, any gaps inside the casing between various components of the motor 10 will be small. For example, the gap between each end bell 20 and 22 and the resin 30 can be 1/8 ". A process for the in
20 situ formation of such a resin 30 around the stator assembly 14 is disclosed in United States Patent Application Serial No. 10/678,928, filed 3 October 2003, filed contemporaneously herewith, the contents of which is incorporated by reference herein.

The generally cylindrical shape of the stator assembly 14 provides a central
25 bore 60 therein for receiving the rotor assembly 16. The rotor 16 includes a motor shaft 62 that is disposed along the central axis 18 of the motor 10. The motor shaft 62 is concentrically surrounded by and affixed to a generally cylindrical rotor core 64,

connects the windings to the motor casing. This potting resin serves three functions: a protective layer that isolates the stator windings from contact with moisture which may enter into the motor interior; a means of filling as much of the voids as possible to reduce the amount of vacuum when the motor cools; and, a heat-transfer medium for conducting heat which is generated in the stator windings while the motor is running to the motor casing for discharge into the atmosphere. The potting resin incorporates a heat transfer agent -- generally a powdered ceramic such as alumina. A process for the in situ formation of such a potting resin around a motor stator assembly is disclosed in Application Serial No. _____, filed contemporaneously herewith, the contents of which is incorporated by reference herein.

The disclosed motor includes a rotatable motor shaft having a fixedly-mounted rotor assembly, which extends along the central axis of the motor. At least one end of the motor shaft (the operative end) extends outside of the motor casing for coupling to a pump or other device.

A pair of circular end bells are disposed at each end of the motor. Each of the end bells is shaped to correspond with the flared ends of the motor casing. Each of the end bells contain a drip groove on the outer diameter of the bearing hub to route condensation to the bottom of the end bell instead of onto the bearing. Each of the end bells contains a centrally-located mounting for bearing assemblies, which both support the motor shaft and allow it to rotate. In addition, at least one of the end bells ("the open end bell") has a shaft bore for passage of the operative end of the motor shaft through one of the bearing assemblies and outside of the motor casing. This region of the motor is prone to moisture intrusion.

To protect the wire windings 48 and the end-turn regions 50 from moisture, humidity, and any corrosive material that may enter the motor casing 12, the wire windings 48 are encapsulated in the solid resin 30. As shown in FIG. 1, the solid resin 30 encapsulates the end-turns 50, the portions of the wire windings 48 that are in the slots (not shown), and any gap that may be present between the core 46 and the inner wall of the motor casing 12. In effect, the resin 30 covers the entire or a substantial portion of the stator assembly 14. The resin 30 is formed so as to be free of voids and virtually integral with the stator assembly 14. The resin 30 is also heat conductive. Accordingly, the resin 30 serves two functions: a protective layer that isolates the windings 48 from contact with moisture that may enter the motor casing 12; and, a heat-transfer medium for conducting heat that is generated in the windings 48 when the motor 10 is running to the motor casing 12 for discharge into the atmosphere. The resin 30 occupies a substantial volume of the casing 12, because it is desirable to have the resin 30 occupy as much of the casing 12 as possible without hindering the operation of the motor 10. Accordingly, any gaps inside the casing between various components of the motor 10 will be small. For example, the gap between each end bell 20 and 22 and the resin 30 can be 1/8 ". A process for the in situ formation of such a resin 30 around the stator assembly 14 is disclosed in Application Serial No. _____, filed contemporaneously herewith, the contents of which is incorporated by reference herein.

The generally cylindrical shape of the stator assembly 14 provides a central bore 60 therein for receiving the rotor assembly 16. The rotor 16 includes a motor shaft 62 that is disposed along the central axis 18 of the motor 10. The motor shaft 62 is concentrically surrounded by and affixed to a generally cylindrical rotor core 64,